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JOURNAL ARTICLE

Immunocytochemical localization of the Yf subunit of glutathione S-transferase P shows regional variation in the staining of epithelial cells of the testis, efferent ducts, and epididymis of the male rat

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Glutathione S-transferases (GSTs) are a family of isozymes that catalyze the conjugation of glutathione (GSH), a tripeptide found in all mammalian cells; this function plays a protective role, as the addition of GSH to an electrophile generally forms a less toxic product. The pi class of GSTs contains homodimers of the Yf subunit, also known as Yp or rat subunit 7; this subunit is found in high concentrations in the testis and epididymis. The objective of the present study was to localize immunocytochemically the Yf subunit in the testis and in the various regions of the epididymis using light, electron, and confocal microscopy. In the testis, immunoperoxidase staining was localized exclusively to Sertoli and Leydig cells. The low cuboidal epithelial cells of the rete testis and the sparse ciliated cells of the ductuli efferents were also immunoreactive. A distinct pattern of immunostaining for the Yf subunit was observed in the different regions of the epididymis. The proximal area of the initial segment showed intense reactivity localized to epithelial basal cells. Basal cells in the middle area of the initial segment were also reactive, as were a second unidentified population of cells located in the apical region of the epithelium. The epithelium, including both principal and basal cells, in the distal initial segment, intermediate zone, and proximal caput epididymidis showed a weak, moderate, or strong degree of reactivity, respectively. In the distal caput epididymidis, however, principal cells showed a checkerboard-like pattern of immunoreactivity, with some cells being intensely stained or faintly stained, whereas others were unreactive. Strikingly, in the corpus and proximal cauda epididymidis, intense immunostaining was localized exclusively over the epithelial basal cells. As viewed in the light and confocal microscope, the intensely stained basal cells showed extensive processes that covered most of the base of the epididymal tubule. Upon quantitation of the immunogold labeling density (the number of gold particles/microns2) in principal and basal cells of the different regions of the epididymis, we observed a sharp decline in immunogold labeling of principal cells coupled with a dramatic increase in labeling of basal cells as we progressed along the tissue, particularly in the transition from the caput to the corpus epididymidis. This study constitutes the first demonstration of a protein that is selectively expressed in epithelial basal cells of the corpus and proximal cauda epididymidis.(ABSTRACT TRUNCATED AT 400 WORDS)

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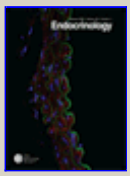

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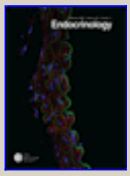

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